Volunteer Lake Assessment Program Individual Lake Reports

BEARCAMP POND, SANDWICH, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	7,680	**Max. Depth (m):**	9.2	**Flushing Rate (yr^{-1}):**	8.5
Surface Area (Ac.):	167	**Mean Depth (m):**	2.7	**P Retention Coef:**	0.46
Shore Length (m):	4,200	**Volume (m^3):**	1,769,500	**Elevation (ft):**	596

TROPHIC CLASSIFICATION

Year	Trophic class
1982	MESOTROPHIC
1998	MESOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

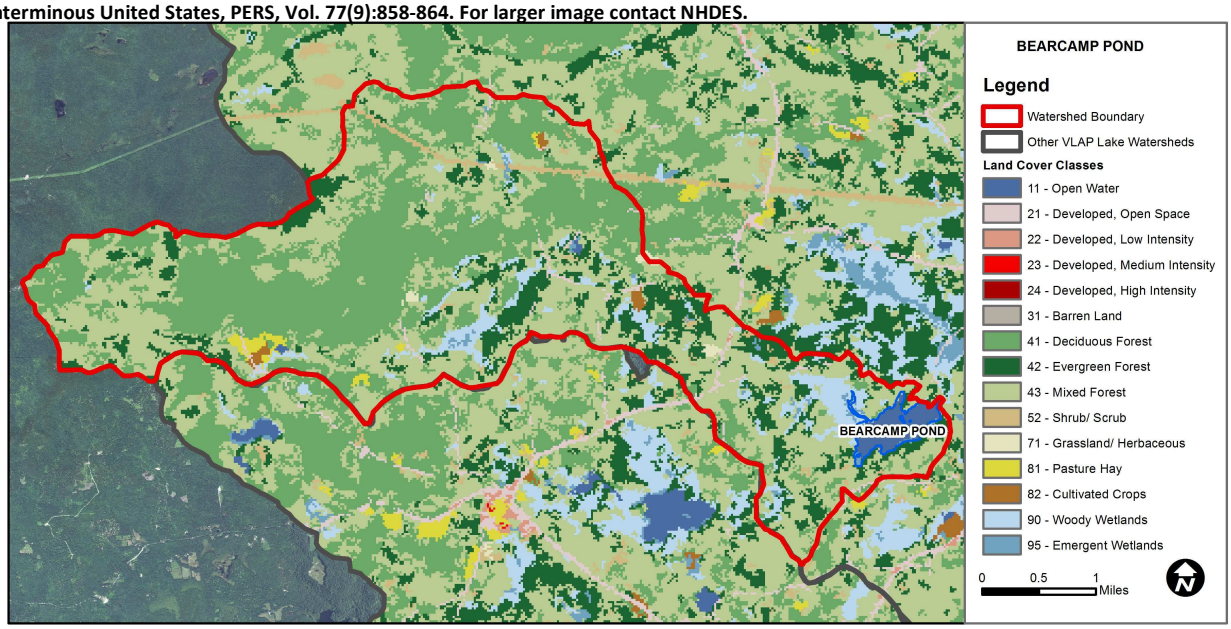
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	D.O. (mg/L)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Encouraging	>2 samples exist that are > 75% of geometric mean criteria, but not enough samples to calculate geomertic mean. No single sample exceedances. More data needed.
	Chlorophyll-a	Good	At least 10 samples with 1 sample but < 10% of samples exceeding criteria.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

BEARCAMP POND - TOWN BEACH	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.

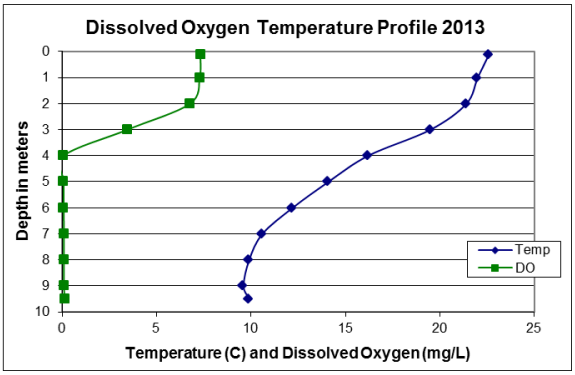


Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	1.76	Barren Land	0	Grassland/Herbaceous	0.3
Developed-Open Space	0.92	Deciduous Forest	36.89	Pasture Hay	0.66
Developed-Low Intensity	0.01	Evergreen Forest	12.32	Cultivated Crops	0.36
Developed-Medium Intensity	0	Mixed Forest	39.88	Woody Wetlands	4.87
Developed-High Intensity	0	Shrub-Scrub	1.36	Emergent Wetlands	0.58

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
BEARCAMP POND, SANDWICH, NH
2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels were low in June and July but elevated in August. Historical data analysis indicates the pond tends to experience elevated chlorophyll levels at the beginning of August. Historical trend analysis indicates stable chlorophyll with low variability between years.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity and chloride levels were low and less than state medians. Historical trend analysis indicates relatively stable epilimnetic conductivity with moderate variability between years.
- **TOTAL PHOSPHORUS:** Epilimnetic and metalimnetic phosphorus levels were low in June and increased slightly in July and August but were less than the state median. Historical trend analysis indicates relatively stable epilimnetic phosphorus with high variability between years. Hypolimnetic phosphorus levels increased monthly likely as a result of internal phosphorus loading from bottom sediments. Tributary phosphorus levels increased slightly in July after a significant rain event.
- **TRANSPARENCY:** Transparency was deeper in June when algal growth was low, but lessened as the summer progressed with the increased algal growth and significant rainfall in July. Historical trend analysis indicates relatively stable transparency with high variability between years.
- **TURBIDITY:** Epilimnetic turbidity increased slightly in July following a significant rain event. Metalimnetic turbidity was elevated in August likely due to a layer of algae. Hypolimnetic turbidity increased as the summer progressed likely due to release of organic compounds from bottom sediments under anoxic conditions. Tributary turbidity remained low which is positive considering the significant rain events prior to sampling in June and July.
- **PH:** Deep spot and tributary pH levels were lower than desirable range 6.5 – 8.0 units. Historical trend analysis indicates relatively stable epilimnetic pH with high variability between years.
- **DISSOLVED OXYGEN:** Dissolved oxygen levels were depleted to less than 1.0 mg/L through the hypolimnion and metalimnion in August. The decomposition of organic material on the lake bottom uses oxygen. Once oxygen levels deplete below 1.0 mg/L, phosphorus typically bound in bottom sediment can be released into the water column.
- **RECOMMENDED ACTIONS:** The increased frequency and intensity of storm events highlights the importance of reducing stormwater runoff to reduce nutrient loading from non-point sources. Educate lake residents on ways to reduce stormwater runoff from their properties utilizing DES' "Homeowner's Guide to Stormwater Management". Keep up the great work!



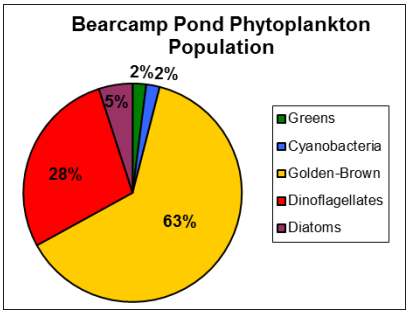


Table 1. 2013 Average Water Quality Data for BEARCAMP POND

Station Name	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m NVS	Trans. m VS	Turb. ntu	pH
Epilimnion	3.73	5.36	3	21.0	11	2.25	2.92	0.67	6.23
Metalimnion				22.8	11			1.79	5.85
Hypolimnion				25.6	16			4.58	5.82
Inlet				20.7	13			0.69	5.95
Outlet				20.8	11			0.69	6.27
Preinlet				21.0	12			0.59	6.39

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	Stable	Trend not significant; data highly variable.	Chlorophyll-a	Stable	Trend not significant; data show low variability.
Conductivity	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data highly variable.